REMARKS

Reconsideration is requested.

Claims 63-65 and 67-96 are pending. Claims 81-96 have been added and are based on claims 63-65, 67-76 and 78-80, respectively, as well as the disclosure of, for example, the last paragraph of page 16 of the specification. No new matter has been added.

The Section 112, first paragraph "written description" or "new matter", rejection is traversed. Reconsideration and withdrawal of the rejection are requested in the view of the following comments.

The Examiner asserts that the originally-filed disclosure allegedly does not describe the claimed antigenic composition being characterized by a reduction of antigenic activity of less than 20% as measure by ELISA, after treatment with protease in 0.25M TRIS buffer at pH 7.2. See page 3 of the Office Action dated May 25, 2006. The Examiner asserts that the specification discloses antigenic compositions that have antigenic activity of 10-20% as measured by ELISA. The Examiner further states that

> "Applicant has failed to direct the Examiner as to where in the instant specification the support for this claim limitation is specifically shown or implied. The Examiner has reviewed the instant specification and has failed to find the support for the amendment. Applicant is required to cancel the new matter in the reply to this Office Action." Id.

Initially, the applicants note that as claim 77 does not include the objected-to phrase, withdrawal of the Section 112, first paragraph, rejection of claim 77 is requested.

As for the Examiner's characterization of the disclosure, the specification includes the following disclosure at page 16, last paragraph:

> "To determine what the antigenic components were in the noted fungal/yeast supernatants, these were treated with DNAse (digests DNA), RNAse (digests RNA) or protease (digests proteins) in 0.25 M TRIS buffer at pH 7.2 before being used in the ELISA. Mouse sera used were from wk 10 of the immunization series (i.e. the highest titres available). The noted enzymatic digestions only had a minor effect on the antigens. Most samples gave results similar to that of the controls for the ELISA reading, a few had reductions of 10-20% in the ELISA reading but there was no consistent pattern to these (data not shown). It appeared that the antigens were either resistant to these enzymes or were components other than nucleic acids or proteins. The latter is more probable, given that these organisms, such as fungi, produce a large range of mycotoxins, aflatoxins, aflatoxicols and fungal lipids (Sigma Chemical Co., St. Louis, MI). In support of this, when fungal/yeast supernatants were freeze-dried, the material made to 10 mg/ml in sterile saline and then run on an SDS-PAGE, only 4 protein bands of 17,000 to 19,500 m.w. were observed both for these preparations and for uninoculated potato-dextrose broth (data not shown)." Emphasis added.

One of ordinary skill in the art will appreciate from a review of the specification as a whole, including the above-quoted passage, that treatment the antigenic composition of the disclosed invention was characterized by treatment with protease to determine if the antigenic activity was substantially due to a protein component.

One of ordinary skill in the art will also appreciate from a review of the specification as a whole, including the above-quoted passage, that when the antigenic composition was treated with protease, "Most samples gave results similar to that of the controls". One of ordinary skill in the art will appreciate that "controls" in this art and in this context were designed to measure a positive control level of signal, or zero

reduction in signal (to the extent of the detection limit of the measurement method), or zero reduction in antigenic activity, in the ELISA test method. One of ordinary skill in the art therefore will appreciate from the originally-filed disclosure that the applicants inventive composition can be characterized as generally not containing a proteinaceous antigenic component.

One of ordinary skill in the art will further appreciate from a review of the specification, including the above-quoted passage, that when the antigenic composition was treated with protease, "a few had reductions of 10-20% in the ELISA reading".

The applicants submit therefore that the specification, as originally presented, describes antigenic compositions which can be characterized

(1) by a reduction of antigenic activity of less than 20%, as measured by ELISA, after treatment with protease in 0.25M TRIS buffer at pH 7.2, or

(2) by a reduction of antigenic activity similar to a control sample and at most 20%, as measured by ELISA, after treatment with protease in 0.25M TRIS buffer at pH 7.2 , or

(3) by a reduction of antigenic activity of 0-20%, as measured by ELISA, after treatment with protease in 0.25M TRIS buffer at pH 7.2.

For completeness, the applicants note that the above-quoted passage further describes the disclosed antigenic composition as containing antigens which are "other than nucleic acids or proteins", as another expression of a small or non-existent proteinaceous component.

For completeness, the applicant further wishes to clarify a possible misunderstanding by the Examiner. Specifically, the Examiner's statement that the

specification discloses antigenic compositions that have antigenic activity "of 10-20% as measured by ELISA", is believed to perhaps suggest some confusion. The Examiner is requested to appreciate that the specification teaches that when fungal or yeast supernatant cultures are digested with protease (which degrades protein), most preparations are unaffected but for some the ELISA reading is reduced "by" 10-20%. The antigenic activity and/or the ELISA readings were not reduced "to" 10-20%. A literal interpretation of the Examiner's characterization of the specificaiton may lead to a misunderstanding in this regard which perhaps was not the Examiner's intention.

Withdrawal of the Section 112, first paragraph "written description" or "new matter", rejection of claims 63-65 and 67-80 rejection stated on pages 3-4 of the Office Action dated May 25, 2006 is requested.

The Section 112, first paragraph "written description", rejection of claims 63-65 and 67-80, stated on pages 4-8 of the Office Action dated May 25, 2006 is traversed. Reconsideration and withdrawal of the rejection are requested in view of the above and the following further comments.

The Examiner states the following:

> "What kind of fungal or yeast components are these? Do these fungal components have specific characteristics or properties? ...
> What constitutes "fungal or yeast cellular material"? The instant specification does not disclose that aflatoxins are contained in the claimed compositions. The specification mere discloses that aflatoxins were purchased and used in the controls (page 9)....
> A description of what components used to formulate the composition might reasonably convey to the skilled artisan that Applicant had possession of the claimed invention at the time the application was filed.

> The claims (dependent claims 78 and 79) require that the claimed compositions are used as vaccines. The term "vaccine" encompasses the ability of the specific antigen to induce protective immunity. The specification merely discloses that the claimed antigenic compositions can be used to elicit antibodies. See pages 17-30 of the instant specification. ...

In response to the Examiner's inquiry regarding characterization of the claimed antigenic composition, the applicants note that the antigenic composition contains a fungal or yeast cell culture supernatant containing fungal or yeast components shed into the supernatant during culturing; said antigenic composition being characterized by a reduction of antigenic activity similar to a control sample and at most 20%, or characterized by a reduction of antigenic activity of 0-20%, as measured by ELISA, after treatment with protease in 0.25M TRIS buffer at pH 7.

The claimed compositions are presented in the form of a product described by the process by which they are produced, i.e., a culture supernatant containing components shed into the supernatant during culturing. The broad claims further require that the antigenicity is not reduced beyond stated limits when treated with protease. Dependent claims further characterize the claimed composition as

(a) containing a mixture of antigens which are capable of binding to different fungal or yeast species;

(b) containing fungal or yeast aflatoxin;

(c) containing components which are capable of binding the antibodies;

(d) including a supernatant prepared and used at a temperature above the freezing point of the composition;

(e) including a supernatant prepared and used at 20 ^{o}C ;

(f) including a supernatant prepared under aeration condition and prepared and used at a temperature above the freezing point of the composition;

(g) including a supernatant prepared under aeration condition provided by gentle shaking and prepared and used at a temperature above the freezing point of the composition;

(h) including a supernatant which displays specific antibody affinity such that only antibodies of a specific fungus or yeast bind to the components;

(i) being obtained from fungal or yeast cells selected from species selected from the group of *Alternaria, Baker's Yeast, Chaetomium* and *Fusarium*;

(j) comprises a mixture of antigens which are capable of binding to different fungal or yeast species selected from *Aspergillus* and *Paecilomyces*;

(k) being from a supernatant of a cell culture of species selected from the group of *Bipolaris, Neosatorya, Penicillium, Stachybotrys* and *Uliocladium*;

(l) being from a supernatant of a fungal cell culture supernatant of *Biopolaris*;

(m) being a composition that elicits an immune response;

(n) containing fungal or yeast aflatoxin and which elicits an immune response; and

(o) being from a supernatant of a cell culture of *Chaetomium*.

Claim 77 similarly defines an antigenic composition containing a fungal cell culture supernatant of *Cladosporium* comprising aflatoxin shed into the supernatant during culturing said fungal cell culture.

The claims are patentable over the art.

When a product is novel and patentable but cannot be defined except by the process by which it is produced, a claim to such a product thus-defined is proper. Ex parte Fesenmeier (Comr. Pats.) 1922 CD 18. 35 USC Section 112 places no limitations on how an applicant claims his invention, so tong as the claims particularly point out and describe the invention. Product claims may include process steps to wholly or partially define the claimed product. In re Hailnian (CCPA 1981) 210 USPQ 609; In re Luck et al (CCPA 1973) 177 USPQ 523; Ex parte Calhoun et al (POBA 1976) 195 USPQ 455.

Product-by-process claims axe proper when the applicant is otherwise unable to define his product other than by the process employed to produce it. In re McKee (CCPA 1938) 37 USPQ 211.

A novel chemical article of manufacture whose structure cannot be precisely defined can be claimed in terms of the physical treatment of the starting material employed to produce it, without reciting the process details of that step, but instead reciting the properties imparted to the product by the step, when these properties would enable one skilled in the art to readily determine the process conditions which should be employed. Ex parte Smith (POBA 1958) 123 USPQ 450.

The necessity of describing a product in product-by-process terms does not preclude claims of varying scope. Ex pane Pantzer et al (POBA 1972) 176 USPQ 141.

The applicants submit, with due respect, that one of ordinary skill in the art will appreciate that the applicants were in possession of the claimed compositions at the time the application was filed. The applicants further submit that the ordinarily skill in the art will appreciate and be capable of making and identifying the components of the

claimed invention from the teachings of the specification as well as the generally advanced level of skill in the art.

The applicants note in this regard, that the Examiner has cited numerous references over the past 4½ years of prosecution which describe preparation and manipulation of various supernatants of fungal and yeast cell cultures. The art of record therefore establishes an ability of one of ordinary skill in the art to be familiar with the components of fungal and yeast cell supernatants. Moreover, the present disclosure and claims define "characteristics" and "properties" of the components of the claimed compositions. See, for example, subparagraphs (a)-(o) above.

The art of record further demonstrates that one of ordinary skill in the art is well aware of what constitutes "fungal or yeast cellular material". Moreover, the claims require the source material to be a fungal or yeast cell culture, requiring the claimed compositions to be fungal or yeast material.

As for the Examiner's assertion that the specification allegedly fails to

> "disclose that aflatoxins are contained in the claimed compositions"

the specification provides evidence, such as on page 19, to support the conclusion that

> As can be seen from the above, some culture supernatants, such as those from *Alternia*, *Aspergillus* and *Penicillium*, are far better than the use of purified aflatoxins (10 ug/0.1ml) for detecting anti-aflatoxin antibodies in mouse sera. It was not determined whether this was a result of higher aflatoxin concentrations in the culture supernatants or whether components in the culture supernatants assisted the binding of the aflatoxins present. Regardless of this, it can be seen from this and the previous text that some culture supernatants not only detect exposure to fungal/yeast cells but also their toxins.

The specification further describes at page 20 (emphasis added) that

> For this species [*Chaetomium*], the average reading for Persian Gulf veterans sera tested on its culture supernatant was nothing unusual. However, upon entering the results into a computer program for averaging, it was clear that, unlike for the other fungal/yeast supernatant data, for *Chaetomium* supernatants the sera was not one but two groups. Twenty of the 28 subjects had low affinity for the antigens, but 8 of the 28 (about 30%) had very high affinity for *Chaetomium* supernatant antigens. It is unclear if this is "cause or effect". The further determination of whether *Chaetomium*, or possibly a related fungus found in the Gulf, cause the illness, or did the illness lead to a susceptibility to fungal infections such as *Chaetomium* is beyond the scope of this investigation.

Finally, the above-quoted passage from page 16 of the disclosure will lead one of ordinary skill in the art to believe that the applicants have produced an antigen composition containing aflatoxins from the recited source material.

Finally, with regard to the Examiner's comments relating to vaccines, the claims have been amended without prejudice to obviate the Examiner's criticisms.

The claims are submitted to be supported by an adequate written description and withdrawal of the Section 112, first paragraph, rejection is requested.

The Section 112, second paragraph, rejection of claims 63-65 and 67-80 is traversed. Reconsideration and withdrawal of the rejection are requested in view o the above which is believed to completely address the Examiner's query as to "What is contained in the fungal or yeast supernatants?" See page 8 of the Office Action dated May 25, 2006.

The claims are submitted to be in condition for allowance and a Notice to that effect is requested.

The Examiner is requested to contact the undersigned in the event anything further is required in this regard.

Respectfully submitted,

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